

Enhancing Education Through Technology (EETT) Competitive Sub-grant Application Assurance Sheet

Project Title: Academic Pangaea Amount of Request: \$ 75,000
 District Name (Fiscal Agent for Consortiums): Grace School Dist. Number: 148
 Please list the school name, and indicate whether it is a targeted school or a partner school and certify the CIPA compliance for all participating schools within the project:

Dist. # or 'P' for Private School	School Name	This school is a targeted school 'T' or a partner school 'P'.	This school is in compliance with the CIPA as outlined on page 3 of the guidance document.
#148	Grace Elementary	T <input checked="" type="radio"/> P	<input checked="" type="radio"/> YES <input type="radio"/> NO
#148	Thatcher Elementary	T <input checked="" type="radio"/> P	<input checked="" type="radio"/> YES <input type="radio"/> NO
#148	Grace Jr./Sr. High	T <input checked="" type="radio"/> P	<input checked="" type="radio"/> YES <input type="radio"/> NO
		T P	YES NO
		T P	YES NO
		T P	YES NO
		T P	YES NO
		T P	YES NO
		T P	YES NO
		T P	YES NO
		T P	YES NO

By signing below, I certify that we have contacted the charter and private schools in our area about participation in this grant and that we have an approved technology plan on file with the Idaho State Department of Education.

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Project Director Name - if different than District Technology Coordinator (print) <u>Stephen Brady</u>	E-mail <u>sbrady@sd148.org</u>	Telephone <u>208-425-3731</u>
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ABSTRACT

Academic Pangaea: Connecting students, math, and science together

Merriam-Webster defines Pangaea as a hypothetical land area believed to have *once connected nearly all of the earth's landmasses together*. The Grace School District # 148 Academic Pangaea (AP) program will target and train math & science teachers to effectively integrate technology into their classroom instruction; better connecting students to the principles of math & science. EETT funds will provide professional development, computer hardware, science software, and access to the Apangea Learning System; allowing highly qualified teachers to expand student vision with updated resources, differentiate instruction to accommodate a variety of learning styles, and offer many opportunities for experiential learning and real-life application of state math and science content standards.

Need for the Project:

Grace School District # 148 is a small, rural school district in southeastern Idaho consisting of two elementary schools, one junior high school, and one high school. Total district enrollment is 447 students with a 55% poverty rate, based upon the guidelines for free and reduced lunch. While many students come from hard-working farm families, opportunities for other types of employment are very limited; leading to many additional students who come from lower income families. Currently, students grades 5-8 struggle in understanding the need for science and math principles in their lives. Furthermore, exposure to technology at home, if present at all, is often limited to surfing the web. Collaboration among administration and faculty have identified a strong need to expose our elementary and junior high students to experiential learning opportunities in math and science through technology that will assist young students in becoming more excited about the applications of math and science and better prepare students for secondary math and science courses, as well as better preparation for post-secondary educational pursuits.

In the spring of 2008, math ISAT scores for high school students in the district were very good, but fifth through eighth grade students scored significantly lower. 2007-08 DMA results also indicated that sixth grade students scored below proficient (2.69). Furthermore, fifth, seventh, and tenth grade science ISAT scores indicated that nearly 30% of students were basic or below basic in science.

School Improvement:

Beginning with the class of 2013, Idaho high school graduation requirements will increase from four to six credits in math and science. Math & science departments in the district have recently re-sequenced their courses to better prepare students to meet the increased graduation requirements. Technology is needed to bolster the rigor and relevance of math & science content areas in grades five through eight in order for such sequencing efforts to be truly successful. Teachers will be able to enhance and differentiate instruction to meet the individual needs of each student. It is believed that reluctant math & science learners will become more engaged in the learning process through technology.

Student Achievement:

As a result of this project, student achievement gains will be expected in math and science subject areas for elementary, junior high, and high school students as determined by ISAT data. Baseline data from the spring of 2009 will be used to determine increased achievement as well as to determine the amount of growth after program implementation. Pre and post implementation surveys will be given to students to gauge increases in interest in math & science subject matter.

Educational Need for the Academic Pangaea Project

All schools in the Grace School District #148 have met the requirements for adequate yearly progress since the inception of NCLB, with the exception of Grace Elementary School, which was placed on alert status for one year and then met the AYP goal the following year. Our school district has been active in trying to look ahead and anticipate areas of concern and implement changes to continue making adequate yearly progress. This goal becomes more challenging as the ISAT proficiency cut scores increase.

Data Sources and Trend Data:

- (1) Grace School District ISAT data indicates that areas for academic improvement include science and math. Among 5th grade students, Science ISAT scores have only improved slightly from 2007 to 2008, with approximately 20% of our fifth grade students still scoring basic or below basic. This percentage of not meeting ISAT proficiency levels increases with our 7th grade students (35%) and our sophomore students (32%).
- (2) The Idaho Direct Math Assessment indicates that our fourth and sixth grade students from both elementary schools perform below average on the DMA, with Grace Elementary students scoring slightly lower than Thatcher Elementary students. Math ISAT data indicates that 6th grade students score the lowest in the district, with 21% scoring basic or below basic. While ISAT scores among our students are higher for math than for science, both areas are cause for concern in meeting the increasing AYP requirements. Perhaps more importantly, however, is the fact that all high students must increase their math and science skills in order to graduate from high school, beginning with the class of 2013. These students will be high school freshmen in the Fall of 2009. It is imperative that our district improve our teaching of math and science among our younger students if they are to succeed under the increased high school requirements mandated by the state of Idaho. We believe that this can be done by increasing technology resources and professional development training for our highly-qualified teachers who teach math and science; with particular focus in grades 5-8.
- (3) Perhaps the data that instills the most awareness comes from an informal district survey, where 100% of both junior high teachers and 5th and 6th grade teachers indicate a low student interest in math and science. Junior high teachers reported that a significant percentage of students seem to struggle with an interest in and willingness to master basic math concepts and all teachers surveyed indicated that a high percentage of students appear to see little value in studying science. This grant proposal looks to technology and professional development to assist teachers in dealing with this challenging trend.

With very little teacher turn-over in the Grace School District, change is slow. However, with building in-service introductions to math programs such as Pangaea and departmental in-service exposure to virtual science lab opportunities, district math and science teachers are more motivated and aware of the benefits of technology infusion than ever before. At one time, all of our district teachers were “coached” through the requirements of the basic state technology proficiency requirements mandated by the State of Idaho, but professional development is needed if an effective infusion of technology is to actually benefit students academically.

- (4) Sadly, technology resources for elementary students are virtually non-existent. Thatcher elementary has 20 computers in their computer lab; Grace elementary has 22 computers.

All of these computers are approximately 10 years old, are unable to meet current software needs, and are unable to run programs such as Apangea. The computers are used almost exclusively for Accelerated Reader testing. The same is true for our junior high students. Computers available at the junior high are antiquated, purchased at the same time as those found in the two elementary schools. However, there is one major difference in terms of accessibility: junior high students are close enough in proximity to the high school so as to occasionally utilize high school computers.

- (5) The district technology plan, district resources, and past grant-writing efforts have provided quality technology opportunities for students' grades 9-12. With five-year goals obtained for updating high school technology resources, the district technology committee has identified the need to upgrade technology resources for students' grades K-8. With the implementation of this grant, math and science will be the focus, but side benefits will include better technology preparation of students in all grades levels leading up to high school, with an increased ability for teachers grades K-8 to better meet district ISISTS standards. Furthermore, through this grant, elementary teachers who are already technology literate will have access to technology resources virtually unavailable under present circumstances.
- (6) Grace High School has recently worked to provide dual-credit courses through ISU in biology, calculus and physics. In addition, students are encouraged, and many students take the opportunity, to enroll in on-line, college level courses such as trigonometry, physiology, and health occupation courses where a strong science background is essential. To ensure the success of such students, our elementary and junior high programs must be able to provide a solid foundation in both math and science. Technology resources will assist in meeting these needs.
- (7) This grant proposal recognizes that professional development is a fundamental key to a successful infusion of technology in the classroom. In a study that examined the relationship between computer usage and student science achievement, Papanastasiou, Zemblyas, and Vrasidas (2003) found that it is not computer usage itself that has a positive or negative effect on student achievement, but the way in which technology is integrated into the curricula.
- (8) Finally, in a review of 311 studies done on the effectiveness of technology on student achievement, Sivin-Kachala and Bialo (2000) found that there were significant gains in all subject areas, increased achievement for students from pre-school through high school, and improved attitudes toward learning when students were engaged in technology-rich environments.

In summary, student ISAT data in the Grace School District indicates the need for changes in student learning environments for both math and science. A critical area of need in the Grace School District is elementary and junior high student/teacher access to effective technology resources and the foundational role such access will have in effective teaching, with an expected increase of student achievement in the areas of math and science. Current research emphasizes the need for effective professional development if an infusion of technology resources is going to provide positive effects in student achievement.

Scope and Sequence of the Academic Pangaea Project

Goal #1: ***Provide professional development training for science teachers in the integration of technology into science curricula.***

Objective 1A: All district science teachers, starting with grade level 5, will be trained in the effective infusion of virtual science lab software into the curricula.

Activity 1A: Select six science teachers (beginning with fifth grade) to participate in the training, representing both district elementary schools and the junior high school.

Timeline 1A: **June, 2009.** Pending grant approval, all teachers have committed to participate in the summer professional development training.

Objective 1B: A science mentor teacher will be selected to assist science teachers during professional development training and throughout the year in technology integration into classroom curricula.

Activity 1B: Science teacher may apply for this position. Position qualifications will include aptitude for technology, leadership skills, and proficiency with science content. An extra stipend will be included for this position.

Timeline 1B: **February, 2009.** Applications will be screened, with district making final decision.

Objective 1C: A two-week, summer in-service training will be held to integrate the new virtual lab software into the curricula and sequence curricula grades 5-8.

Activity 1C: Teachers will be trained in effective use of virtual lab software and complete lesson plans for classroom integration. Sequencing decisions with the elementary schools and junior high will be made during this time.

Timeline 1C: **June, 2009.** Virtual lab software programs have already been researched and identified. Mentor teacher will prepare to assist teachers during summer prof. development training and throughout the school year.

Objective 1D: Provide continued, high-quality prof. development/collaboration of science team members for planning, reporting, evaluation and revisions.

Activity 1D: Team members will meet monthly to report, evaluate, revise and deal with implementation questions. A district administrator will oversee these mtgs.

Timeline 1D: September, 2009 – May 2010. Meetings will be held on the first Tuesday of each month.

Goal #2: ***Provide training for integration of Apangaea into math curricula in grades 5 and 6, pre-algebra, and Math 8C.***

Objective 2A: Six math teachers (2 JH and 2 from each elementary building) will be trained to use Apangaea to enhance math curricula, grade levels 5-8.

Activity 2A: A one week training session will be held to familiarize teachers with Apangaea and integrate applications into math curricula.

Timeline 2A: **August, 2009.** Training is scheduled for the second week of August, just prior to the beginning of the 2009-10 school year.

Objective 2B: Math teachers will adjust scope and sequence of math curricula to more effectively sequence math concepts for students as they transition from the elementary schools to the junior high school.

Activity 2B: Grade level teachers will collaborate to determine core math concepts to be taught in each grade, using the TIA (Total Instructional Alignment) document developed during the summer 2008, southeastern Idaho Consortium.

Timeline 2B: **August, 2009.** Training is scheduled for the second week of August, just prior to the beginning of the 2009-10 school year.

Goal #3: ***Provide increased access to technology resources for elementary and junior high teachers.***

Objective 3A: Provide teachers with computer hardware to effectively integrate technology into math and science curricula.

Activity 3A: Purchase computers for two elementary labs and a JH science lab.

Timeline 3A: **April, 2009.** Order computers in April, install in May, ready for use during the June and August professional development trainings.

Objective 3B: Provide teachers with projectors to effectively instruct students and model virtual science lab and Apangaea modules.

Activity 3B: Purchase three digital projectors, one for each lab, to assist teachers in instruction and modeling of computer activities for students.

Timeline 3B: **April, 2009.**

Objective 3C: Provide science teachers with virtual lab software. Access to Apangaea provided by the State Department of Education.

Activity 3C: Purchase science virtual lab software.

Timeline 3C: **April, 2009.**

Goal #4: ***Increase student achievement in science and math.***

Objective 4A: Show academic growth on 5th, 7th and 10th grade science ISAT scores and grades 5-8 math ISAT scores.

Activity 4A: Use Spring 2009 science and math ISAT scores as baseline data. Compare to Spring 2010 data. Report progress at the district opening in-service training, 2010-11 school year.

Timeline 4A: **August, 2010.**

Objective 4B: Show increase in student interest in math and science through pre & post surveys.

Activity 4B: Pre-implementation student surveys will be given to students, collecting attitudinal data on student interest in the subjects of math and science. Post surveys will be given to measure changes in student attitudes.

Timeline 4B: **May, 2009 & May, 2010.**

As indicated above, measurable data aligned with the objectives will be collected using pre and post implementation ISAT scores and pre and post attitudinal survey data. Project team members will include:

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| (1) District Admin./Prof. Dev. Facilitator – | Provide oversight and support for summer in-service sessions (3 weeks) |
| (1) District Technology Coordinator- | Installation of hardware/software, etc. |
| (1) District Teacher/Mentor- | Direct prof. dev. training & collaboration |
| (6) Science Teachers - | Increase skills, infuse technology, |
| (6) Math Teachers - | differentiate instruction, create a enriched learning environment |

Sustainability of the Academic Pangaea Project

District administrative support is vital to the sustainability of any project. Grace School District administration is committed to sustaining projects seeking to increase student achievement in correlation with the educational goals outlined by the State Department of Education and its local school board. With AYP accountability and state mandated increases in math and science requirements set for graduating students in 2013, Grace School District administration is committed to providing resources to encourage effective classroom teaching while modeling effective uses of technology, in order to prepare students for a competitive, global economy. Hence, the Grace School District is committed to utilizing future technology and district funds to update technology equipment to sustain effective programs. The Grace School District currently has in place a technology replacement rotation for current technology equipment utilized by existing programs. District financial commitment has been assured for sustaining the Academic Pangaea Project.

In addition to financial support, professional development is a critical component for sustaining any viable program. This grant proposal provides for initial professional development training, as well as on-going professional development to provide course sequencing, planning, reporting, evaluation, and revision of project goals, and communication and collaboration to promote successful student transition from elementary to junior high educational settings. With involvement of district administration in the implementation of the Academic Pangaea Project, a high degree of support and investiture will accompany this project and allow for continued in-service training beyond the scope of the grant timelines.

ISAT data, although summative in nature when determining the AYP status of schools, also provides formative data to evaluate teaching practices and programs and allows teachers to focus on needed areas of improvement. As was the case with the data analysis done in preparation for this grant proposal, on-going data analysis will continue to provide direction for sustaining the Academic Pangaea program with appropriate modifications and improvements to serve the individual, educational needs of our students.

Each year, the Grace School District reviews its district technology plan, to assure that it is reflective of current education demands, as those demands relate specifically to the use of technology in education. The district also has a district technology committee, made up of district staff, administration, school board representation, members of local businesses, parents, and other community members. The district technology plan and district technology committee serve to keep the district headed in an effective direction, reflecting local values and staying up-to-date on the ever-changing nature of educational and business practices. These tools help to provide sustainability for effective programs.

**Academic Pangaea Project
Budget Spreadsheet**

Alignment with Project Activities	Item/Description	Qty.	Cost Each	Total Cost
TECHNOLOGY EQUIPMENT				
Objective 3A & Objective 3C	Computer lab hardware/software	42	\$1,075.00	\$45,150.00
Objective 3B	3 Digital Projectors	3	\$800.00	\$2,400.00
Objective 3C	Science Virtual Lab Software			\$2,250.00
	Subtotal of Technology Equipment Costs			\$49,800.00
PROFESSIONAL DEVELOPMENT				
Objectives 1A, 1C Objective 1D	Science Teacher Stipends (64 hrs. x \$25/hr. = \$1600)	7	\$1,600.00	\$11,200.00
Objective 2A Objective 2B	Math Teacher Stipends (32 hrs. x \$25/hr. = \$800)	6	\$800.00	\$4,800.00
Objective 1B Objective 1D	Teacher/Mentor Stipend (100 hrs. x \$25/hr. = \$2500)	1	\$2,500.00	\$2,500.00
Objectives 1A, 1B Objectives 1C, 1D Objectives 2A, 2B	Prof. Development Facilitator Stipend (96 hours x \$10.41/hr. = \$1000)	1	\$1,000.00	\$1,000.00
	Subtotal Professional Development Costs (26% of total grant funding)			\$19,500.00
OTHER EXPENDITURES				
Objective 4A Objective 4B	Administrative Costs [Financial mgt., survey administration, data collection and analysis, paycheck distribution, grant reporting, oversight of personnel = \$3,500 (5% of total grant funds)]		\$3,500.00	\$3,500.00
Objectives 3A, 3B Objectives 1C, 2A	Installation of Equipment/Technical Support during Professional Development Training		\$2,200.00	\$2,200.00
	Total EETT Grant Budget Request			\$75,000.00

Budget Narrative

<u>64 Hours (Two weeks) of Professional Development Training</u> Seven science teachers and one teacher mentor, with district administrative collaboration and oversight, dealing with technology integration, program sequencing, and inter-school collaboration. Includes monthly follow-up meetings for one year.	\$13,700
<u>32 Hours (One Week) of Professional Development Training</u> Six math teachers, with district administrative collaboration and oversight, dealing with Apangaea training and implementation, lesson plan development, and inter-school collaboration. The six teachers will, in-turn, will introduce Apangaea to other building teachers throughout the school year.	\$4,800
<u>District Administration/Facilitator Stipend</u> Stipend for district administrator to oversee both professional development trainings (3 weeks) and the on-going follow-up meetings during the school year.	\$1,000
SUBTOTAL FOR PROFESSIONAL DEVELOPMENT	\$19,500
<u>Hardware and Software Components for Computer Labs</u> 42 computers, 3 digital projectors, and Science Virtual Lab Software. Allows technology access for students in both elementary schools and the junior high school.	\$49,800
<u>Installation Costs/ Technical Support for Prof. Dev. Trainings</u> Cost to install computers in three district buildings, networking, computer configuration, software installation, on-call for training sessions.	\$2,200
<u>Administrative Costs</u> Financial management and follow-up, survey development and administration, data collection and analysis, grant reporting, etc.	\$3,500
TOTAL GRANT BUDGET REQUEST	\$75,000